VoiceFinder AP160

Dial-Up VoIP Residential Gateway

Installation Guide

Release 1.1

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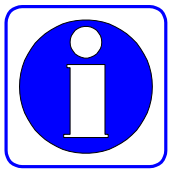
About This Guide

Information



This chapter outlines the structure of VoiceFinder AP160 VoIP Gateway Installation Guide and explains the symbols and legends.

[Organization]

The VoiceFinder AP160 VoIP Gateway Installation Guide is offered to assist the operation VoiceFinder AP160 VoIP Gateway. This manual is composed of 4 chapters.

Experienced users may refer directly to the related chapters. However, less experienced users are highly recommended to thoroughly review this manual before operation of the gateway.

- Chapter 1 『**Introduction**』 provides an introduction to the H/W and S/W of VoiceFinder AP160 VoIP Gateway and how to apply for the technical supports.

- Chapter 2 『**Before Installation**』 provides an explanation on the installation environment and cable requirements along with recommendations for safe operation of the equipment.

- Chapter 3 『**Installation**』 explains the basic installation information on connecting the gateway with cables, how to use Console terminal and etc.

- Chapter 4 『**Appendix**』 includes the specification of the gateway, the cable and etc.

For technical supports, please contact AddPac Technology Co. Ltd.

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The revision history of VoiceFinder AP160 VoIP Gateway Installation Guide is as follows.

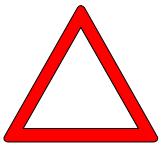
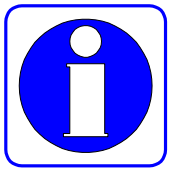
Revision No.	Date	Comments	Written by
Version 1.0	July 14, 2003	Initial Released	AddPac R&D Center

[Symbols and Legends]

The symbols and legends used in this User's Manual are as follows :

- Commands and Keywords are typed in **Bold**.
- Variables that require user inputs are typed in *Italic*.
- Square brackets ([]) are optional values.
- Keywords that are required but need to be selected are grouped in braces ({}) and are separated by Slashes (/).
- Angle brackets (<>) are required parameters must be inputted.

The following conventions are also used to attract the user's attention.

Danger 	**Danger** This symbol signals possible danger. Misuse could result in physical injuries. Please follow the instructions to avoid any electronic shocks.
Warning 	**Warning** It warns the users to be careful with the operation. Otherwise, it could result in hardware damage of the equipment or loss of data.
Caution 	**Caution** This symbol calls for the user's caution. Otherwise, it could result in hardware damage of the equipment, loss of data or system configuration.
Information 	**Information** This symbol indicates additional information offering detailed information for understanding this user guide.

Chapter 1. VoiceFinder AP160 Overview

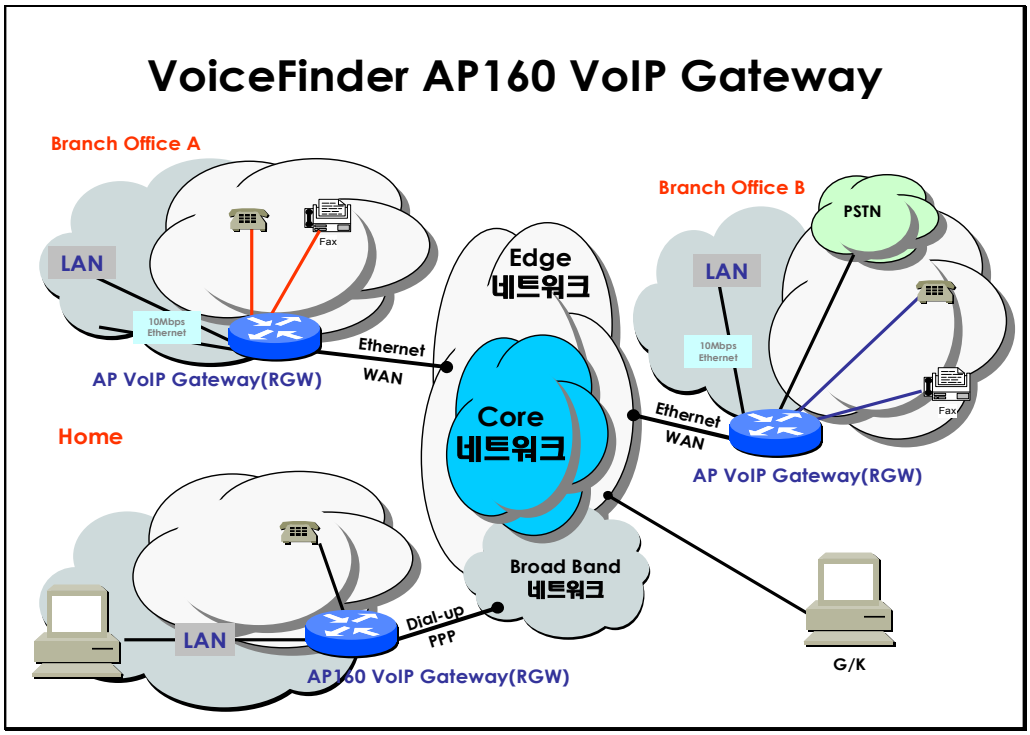
Introduction to VoiceFinder AP160 Gateway

Information

VoiceFinder AP160 VoIP Gateway (hereinafter "VoiceFinder AP160 Gateway") is a high-performance VoIP gateway using PPP protocol over PSTN dial-up modem and Ethernet (LAN). VoiceFinder AP160 Gateway, with an internal dial-up modem, supports cost-efficient data and voice services in junction with PSTN networks.

The below is the network diagram using VoiceFinder AP160 Gateway.

Figure 1-1: The network diagram using VoiceFinder AP160 Gateway.



VoiceFinder AP160 Gateway supports inter-operability with carrier-class backbone gateways, gatekeeprs and routers along with existing AP VoIP gateway series realizing easy installation and maintenance.

The below figure is the exterior view of VoiceFinder AP160 Gateway.

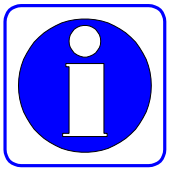
Figure 1-2: The exterior view of VoiceFinder AP160 Gateway

As a supplementary service, VoiceFinder AP160 Gateway provides Packet Filtering and Firewall function using an Access List method. The Firewall function restricts access to the local network from outside networks using source and destination IP address access list information at the Network Layer (IP Layer) and at the Transport Layer (TCP/UDP Layer).

Also, using DHCP (Dynamic Host Configuration Protocol), this equipment can assign IP addresses to network clients automatically (DHCP server mode) and can receive a dynamically assigned IP address from a DHCP Server (DHCP client mode). VoiceFinder AP160 Gateway solves the IP address shortage problem by using NAT (Network Address Translation) protocol. The local IP address can be hidden from the outside world when NAT protocol is employed. This means that VoiceFinder AP160 Gateway can be used as a security device simultaneously.

Main Features

Information



VoiceFinder AP160 Gateway provides a high-performance voice over IP (VoIP) solution for SOHO, enterprises and houses via a telephone line. It offers one async. Dial-up port, one FXS voice interface and a LAN port for PC connection.

VoiceFinder AP160 Gateway can be the most cost effective solution for the customers want to use Internet and telephone service with ordinary telephone line.

Also, the installation and operation of the VoiceFinder AP160 Gateway are easy even for the first time users.

Hardware Description

VoiceFinder AP160 Gateway supports the various network interface and voice interface modules based on latest Embedded H/W technology and system memory. The main H/W features are as followings.

- High Performance WAN-to-LAN Residential VoIP Gateway
- High Performance 32bit RISC Microprocessor Architecture
- Fixed 1-Port PSTN modem Interface (RJ11)
- Fixed 1-Port 10Mbps Ethernet Interface for LAN Service (RJ45)
- Fixed 1 Port FXS Voice Interface (RJ11)
- Fixed 1-Port Asynchronous Serial Interface for Console Port (RJ45)
- Compact Design
- DC External Power Supply Adaptor
- Various System LEDs

Voice over IP Service

- Supports Voice and Data integration service
- Supports maximum 1 FXS voice port offering VoIP service by connected to PBX, ordinary telephone and fax machines.
- Supports VoIP protocols of H.323 v2, SIP, MGCP

- Supports the G.723.1, G.729.A, G.711 Voice Compression Algorithms using High Performance DSP
- Voice Processing function such as VAD, DTMF, FAX Tone auto detection, CNG, Echo Cancellation
- Supports T.38 G3 FAX Relay
- Interoperable with H. 323 based Gateways and Gatekeepers

IP Routing Protocols

VoiceFinder AP160 Gateway supports various IP routing protocols. The main IP routing features are followings.

- Static, Default IP routing protocols
- Transparent Bridging (IEEE Spanning Tree Protocol)

Network Managements

VoiceFinder AP160 Gateway supports various network management protocols and functions.

- Standard SNMP Agent (MIB v2), MIB II, Bridge MIB Support
- Consol function with Async. Port.
- Remote Management using Console, Rlogin, Telnet.
- Traffic Queuing
- Web based Managements.

Security Functions

VoiceFinder AP160 Gateway supports various security functions.

- Standard & Extended IP Access List for network security function.
- Enable/Disable for Specific Protocols
- Multi-level User Account managements
- Auto-Disconnect for Telnet/Console Sessions
- *VPN function

Operation and Managements

VoiceFinder AP160 Gateway supports following operation and maintenance features.

- System Performance Analysis for Process, CPU, Connection I/F
- Configuration Backup & Restore for APOS Managements
- Debugging, System Auditing, and Diagnostics Support
- System Managements with Data Logging
- System Booting and Auto-rebooting with Watchdog Feature
- IP Traffic Statistics with Accounting

Other Scalability Features

VoiceFinder AP160 Gateway supports various supplementary service functions.

- DHCP server function for easy IP management
- NAT/PAT function for effective IP management
- Remote S/W upgrade with TFTP & FTP
- Industry standard Command Line Interface type operation
- Network Time Protocol (NTP)

Hardware Configuration and Network Interface

Information

This Chapter explains the external form and network interfaces of VoiceFinder AP160 Gateway.

VoiceFinder AP160 Gateway Part & Description

VoiceFinder AP160 Gateway is made by the high intensity ABS with compact design. The front panel of VoiceFinder AP160 Gateway includes various LEDs indicating the operational status of the device. The back panel of AP160 is designed to support the FXS voice interface port, PSTN modem interface, PSTN interface and LAN interfaces including RS-232C serial port.

Front View of AP160

The front panel of VoiceFinder AP160 Gateway includes various LEDs indicating the operational status of the device. The following figures are the external form of VoiceFinder AP160 Gateway.

Figure 1-3: VoiceFinder AP160 Gateway front view

Figure 1-4: The front panel image of VoiceFinder AP160 Gateway

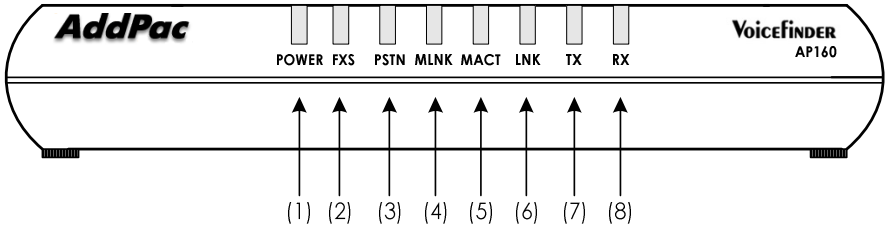


Table 1-1 shows the functional explanation about each LED of VoiceFinder AP160 Gateway.

Table 1-1: The interfaces and explanation of the front panel of AP160.

No.	Interface	Explanation
(1)	**POWER**	Power LED, display whether external power is supplied normally or not. **(Green)**
(2)	**FXS**	Display the operation status of "FXS" voice interface port.(Yellow)
(3)	**PSTN**	Display the operation status of PSTN backup port (**Red**)
(4)	**MLINK**	Display the LINK status of PSTN modem interface (**Green)**
(5)	**MACK**	Display the activity status such as transmission and receive packet of PSTN modem interface. (Yellow)
(6)	**LNK**	Display the LINK status of Ethernet interface.(**Green**)
(7)	**TX**	Display the transmission activity of Ethernet interface.(Yellow)
(8)	**RX**	Display the transmission activity of Ethernet interface.(Yellow)

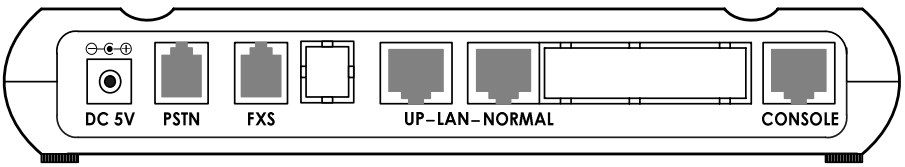
Rear View of AP160

The rear side of the AP160 dial-up VoIP gateway includes 10Mbps Ethernet Interface for WAN/LAN interface, HomePNA port, RS-232C serial port for management, and FXS interface port for voice signal processing. The Ethernet port is used for VoIP service via WAN side such as xDSL and cable modem networks. Also this Ethernet port can be used for external modem application via LAN port of Personal Computer.

Standard Configuration Model

Following figure shows the standard configuration of the back panel of VoiceFinder AP160 gateway.

Figure 1-5: The rear panel image of VoiceFinder AP160 Gateway



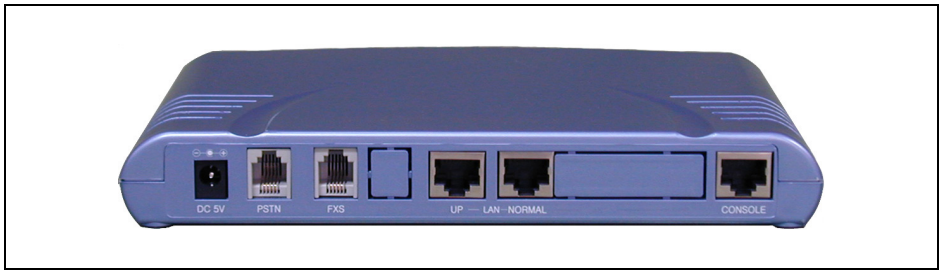
The following Table 1-2 explains the rear side panel interface of AP160 dial-up VoIP gateway.

Table 1-2: The interfaces and explanation of the rear panel of AP160 Gateway

No.	Interface	Explanation
(1)	**DC power**	External DC power supply input (5V)
(2)	**PSTN**	This port is used to connect PSTN subscriber line for VoIP service via dial-up modem or PSTN backup (RJ11)
(3)	**FXS**	1 FXS Port: analog phone or FAX machine can be connected (RJ11)
(4)	**UP-LAN-NORMAL**	10 Mbps Ethernet interface for WAN or LAN connection. UP port is used for uplink or direct connection with PC LAN port. NORMAL port can be used for LAN port connection via HUB equipment. UP and NORMAL ports are not two LAN port. Therefore user should select one(1) LAN port type among UP and NORMAL LAN ports. (RJ45)
(6)	**Console**	RS-232C port for system management (RJ45)

Following Figure 1-6 shows the back panel interface picture of AP160 dial-up VoIP gateway.

Figure 1-6: The real panel picture of VoiceFinder AP160 Gateway



Fixed Network Interface

VoiceFinder AP160 Gateway supports the following network interfaces:

- **1 port PSTN modem interface**
- **1 Port 10Mbps Ethernet Interface for LAN**
- **1 Port RS232C Asynchronous Serial Interface**

With the above network interface, VoiceFinder AP160 Gateway can establish WAN (PPP) and LAN network supporting TCP/IP network protocol. So it can easily form VoIP network on the broadband network of ADSL and Cable Modem. Also, the Console port offers easy configuration of the gateway. Moreover, it offers modem interface with PPP connection for WAN connection realizing simple VoIP network formation at ordinary household and SOHO.

The next section explains the network interfaces of VoiceFinder AP160 Gateway.

1-Port async Dial-up modem Interface (RJ11)

VoiceFinder AP160 Gateway provides one (1) Async modem interface for WAN (PPP). The users can call by connecting to Public Switched Telephone Network (PSTN) with PPP and the calls received to this port are relayed to FXS port. It is the standard R11 type interface.

1-Port 10Mbps Ethernet LAN Interface (RJ45)

VoiceFinder AP160 Gateway supports one (1) 10Mbps Fast Ethernet Interface. Using this LAN Interface, the LAN can be formed.

1-Port Async Serial Interface for Console Port (RJ45)

VoiceFinder AP160 Gateway provides network management features using an RS-232C asynchronous serial interface port.

Fixed Voice Processing Interface

The fixed voice interface of VoiceFinder AP160 Gateway can be connected to the ordinary telephones, fax machines and PBX.

- **FXS Interface voice processing port**

VoiceFinder AP160 Gateway can offer multimedia service of data and voice at one device.

1Port FXS Voice Interface

zVoiceFinder AP160 Gateway supports One(1) Port FXS (Foreign Exchange Station) Voice Interface Module. Using these FXS Voice Interface Module, VoiceFinder AP160 Gateway provides analog Line Interface solutions that can interface to general phones, Fax machines and etc.

Chapter 2. Before Installation

Installation Requirements

Warning The following recommendation should be followed for safe operation of the product.

- Ensure VoiceFinder AP160 Gateway is in a dust-free environment before and after installation.
- Make sure to open VoiceFinder AP160 Gateway cover on a flat and safe surface.
- To prevent accidents, be careful with ties, scarf, sleeves, and any other loose clothing from entangling with the chassis.
- Avoid any actions that may effect the equipment or the operator.

Electrical Requirements

Danger There are two main sources of electrical problems with the AP160 dial-up VoIP gateway : the power supply and static electricity.

This section describes safety recommendations for each case.

- **Electrical Safety**
  - ✓ Operate at a position where immediate shut-off of power supply is possible.
  - ✓ Turn off the power while installing or taking the cover off the equipment.
  - ✓ Avoid operating the equipment alone at potentially dangerous environment.
  - ✓ Do not assume the power is switched off, but always confirm the power status.
  - ✓ Be extremely cautious when operating in a humid environment or with an ungrounded power extension cable.
- **Prevention of Static Electricity**
  - ✓ The main chip-set of the Gateway is very delicate and misuse may result in static electrical damage.

- ✓ If a static prevention wrist strap is available, strap it around the wrist and earth the cord before operating the equipment.
- ✓ If no wrist strap is available, earthening by holding a metal part of the Chassis will help prevent static electricity.

General Requirements

Warning

VoiceFinder AP160 Gateway is ready for use where other electronic products can be used. However, the following conditions are recommended for maximum performance.

- ✓ A flat and well ventilated location
- ✓ Secure the equipment safely at the desired place to install.
- ✓ Do not place any objects on top of the equipment.
- ✓ A location without direct sunlight.
- ✓ Keep away from flammable, chemical, or magnetic objects

Network Connection Requirements

Warning

Consider EMI Standard and distance limitation while installing VoiceFinder AP160 Gateway.

The below explains PSTN cable, Ethernet cable, Console Cable of VoiceFinder AP160 Gateway.

Necessaries

Unless ordered in advance, the tools and certain cables are not provided in the package. Prepare the following equipments and tools before the installation.

- Standard screwdriver set
- Cables for LAN and Console port connection
  - ✓ RJ-45 to RJ-45 cable for LAN port
  - ✓ RS-232C Console cable with RJ-45 connector (included in the package)
- Cable to connect Phone port
  - ✓ RJ-11 to RJ-11 ordinary telephone cable
- Cable to connect PSTN port of telephone connection networking
  - ✓ RJ-11 to RJ-11 ordinary telephone cable

Async (PSTN) Port

VoiceFinder AP160 Gateway offers one (1) RJ11 type PSTN port on the rear panel. Also, the LEDs indicating the port status are placed on the front panel. Use the proper cable and connector to access PSTN network with this port.

Ethernet Port

VoiceFinder AP160 Gateway offers two (2) RJ45 type 10BaseTX Ethernet Ports on the rear panel and LEDs are indicating the port status are on the rear panel. These ports are physically connected and use a cross cable for LAN1 and use direct cable for LAN0. The gateway considers these ports as one port, so the user can use only one part at a time.

RS-232C Serial Console Port

VoiceFinder AP160 Gateway offers one (1) RJ-45 type RS-232C Female DCE connector on the rear panel. This port is for the initial configuration, monitoring and debugging.

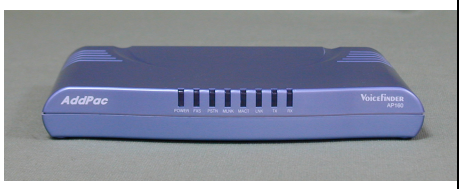
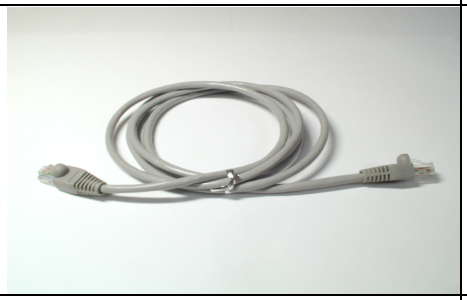
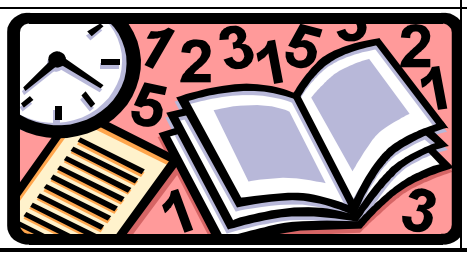
Chapter 3. Gateway Installation

Unpacking

Before unpacking, check for external damage to the packaging box.

If no external damages are found, confirm if the following items are enclosed.

Table 3-1: VoiceFinder AP160 Gateway package

No.	Item	Contents	Q'ty
1	AP160		1
2	LAN Cable (for RJ45 to RJ45)		1
3	Console Port cable (for RJ45 to DB9)		1
4	External Power and Power Cable (220V Power Cord)		1
5	AP160 Installation Guide, Quick Operation Guide, APOS Operation Guide		3

If any item is missing, immediately contact AddPac Technology Co. Ltd. customer support.

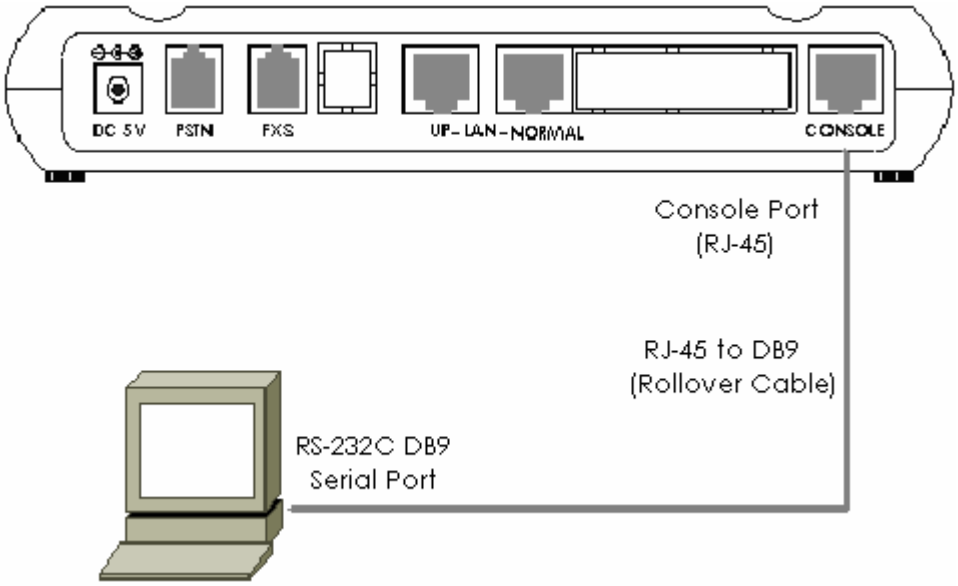
AP160 Interfaces and Cable connection

- Install VoiceFinder AP160 Gateway at the recommended and stable installation place.

Async Serial Interface Connection

- Connect RJ45 connector of RS-232C serial console cable to the Console port and connect the other side of the cable at the serial port of the PC.

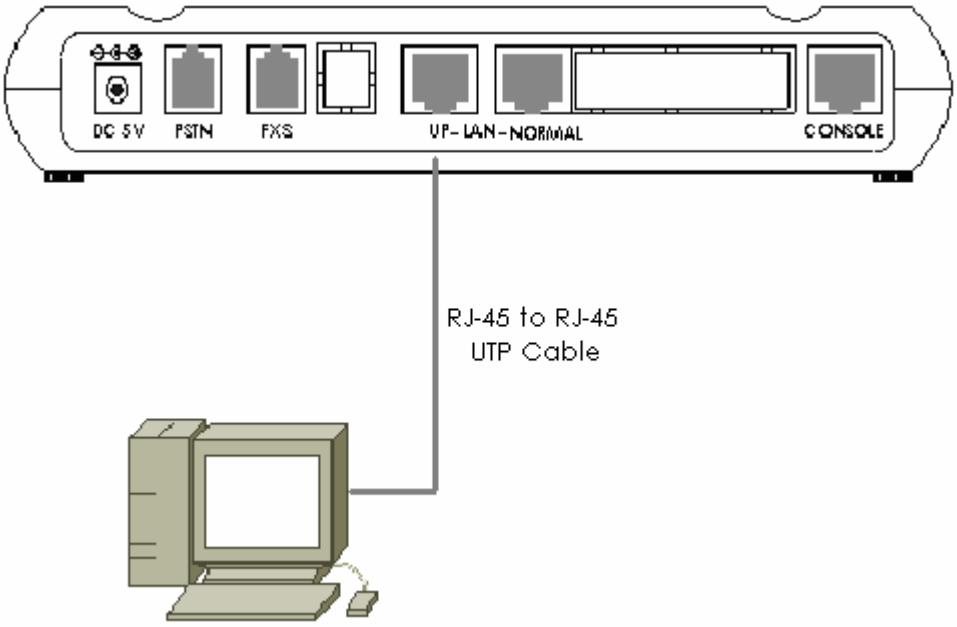
Figure 3-1: Connect VoiceFinder AP160 Gateway and Console PC



Ethernet Interface Connection

Connect LAN port of VoiceFinder AP160 Gateway and LAN port of the WAN/LAN device with RJ45 UTP cable. Use Straight-through UTP cable. To connect with HUB, use Normal Port, not Uplink. Uplink and Normal Port are the same interface except the Pin arrangement, so use only one port at a time.

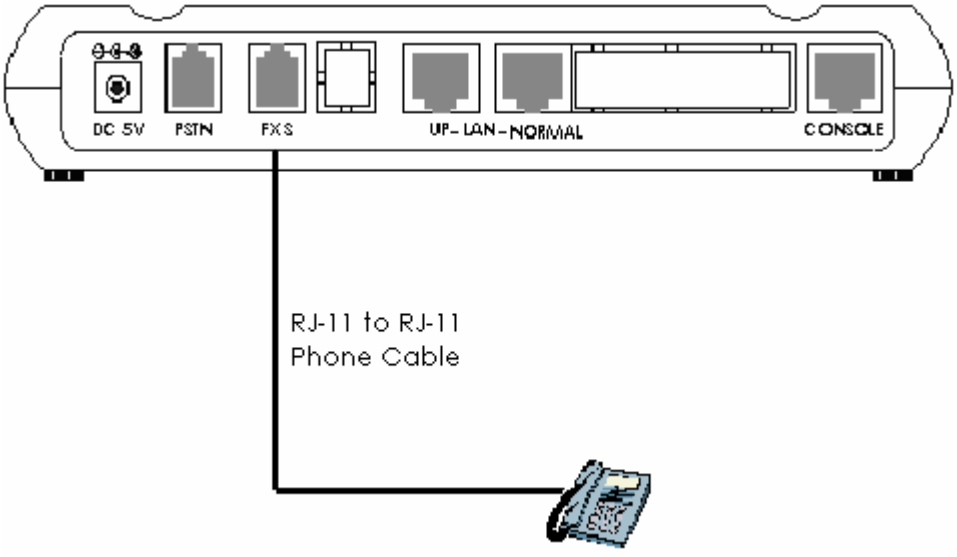
Figure 3-2: Connect VoiceFinder AP160 Gateway and normal PC



FXS Voice Interface Connection

- Connect FXS port and subscriber voice device with RJ11 cable.

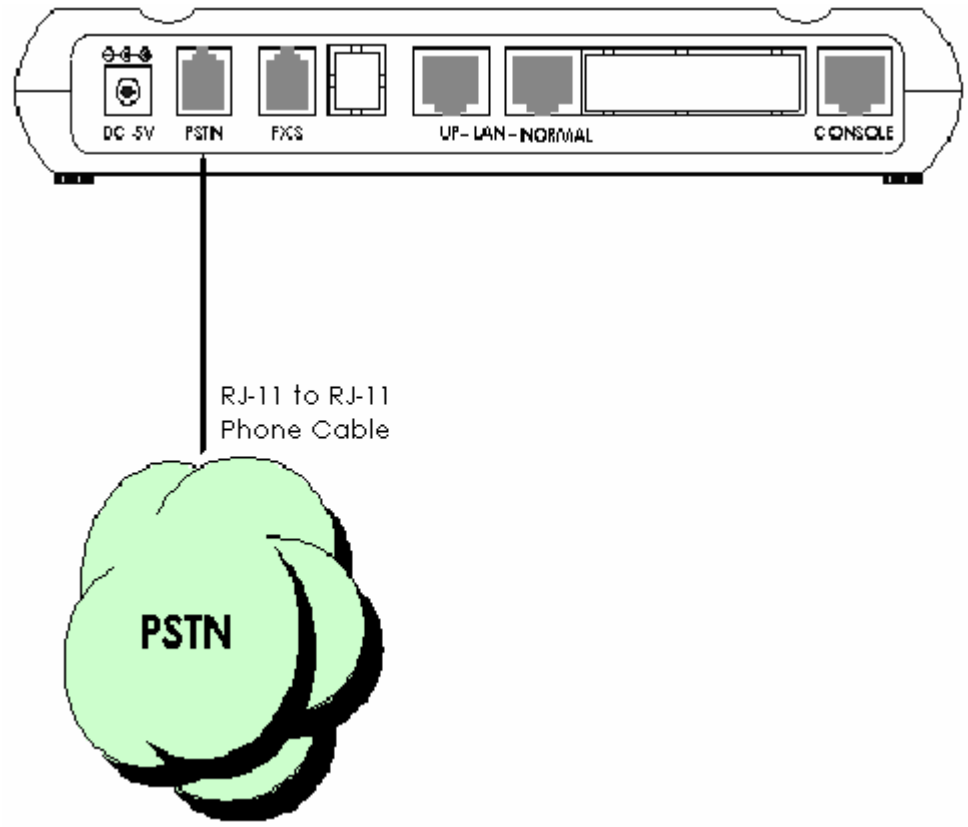
Figure 3-3: Connect VoiceFinder AP160 Gateway and a normal telephone



[

PSTN Interface Connection

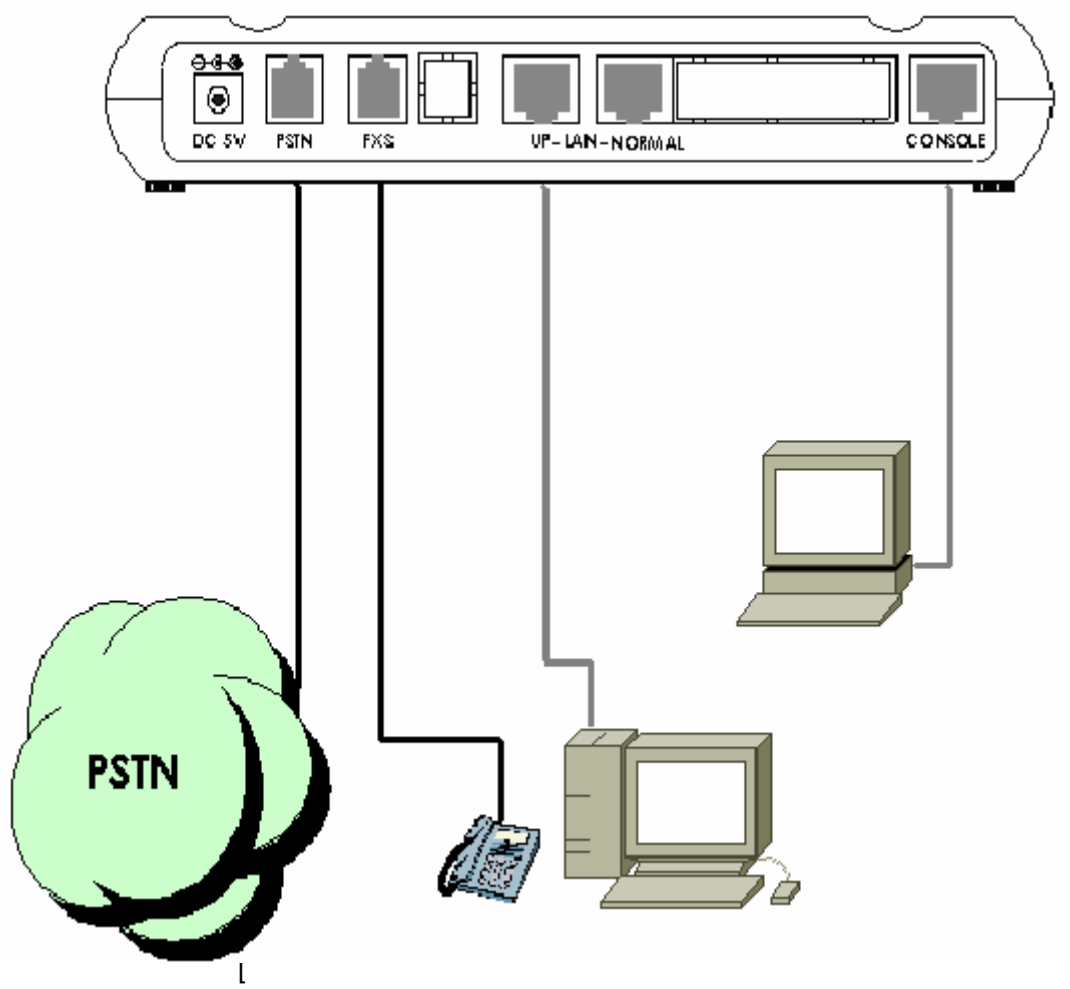
- Connect the PSTN line to the PSTN port.



VoiceFinder AP160 Interface connection example

The below figure is the interface connection example of VoiceFinder AP160 Gateway.

Figure 3-4: The example of interface connection



Booting

When power is supplied, the system is booted as described below.

- VoiceFinder AP160 Gateway performs a self-test and checks basic operations of the CPU, the memory and interfaces.

- The boot loader is executed, and the boot loader seeks for proper software image files. The boot loader loads the broadcasting system software from the flash memory.

- If the boot loader cannot find proper software image file from the flash memory, the boot loader stands by in the boot mode until it receives proper software from the remote system. (At this time, the boot loader can download software through TFTP or FTP protocol.)

- When the software is loaded, the broadcasting system starts to operate according to configuration information. However, if there is no configuration information, it operates according to the default values, and in this case, the operator shall set up related items for normal operation of the network.

Danger

After connecting all the interfaces, supply the power to VoiceFinder AP160 Gateway. Supply the power after connecting the adapter to VoiceFinder AP160 Gateway. Do not connect the adapter to the power supply before connecting it to the gateway. Also, use 110V adapter in case the power supply is 110V. However, the gateway detects both 110V and 220V, so there is no additional setting required.

Figure 3-5: The front panel of VoiceFinder AP160 Gateway

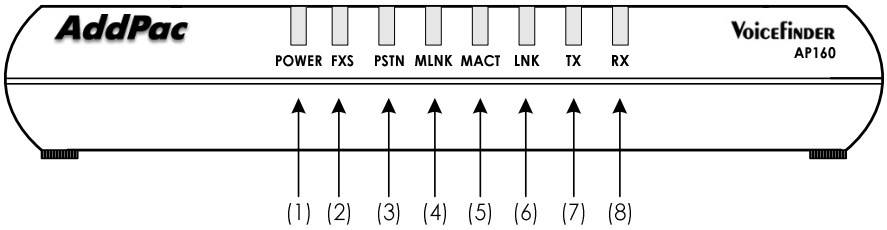


Table 3-2: The LEDs and description of VoiceFinder AP160 Gateway

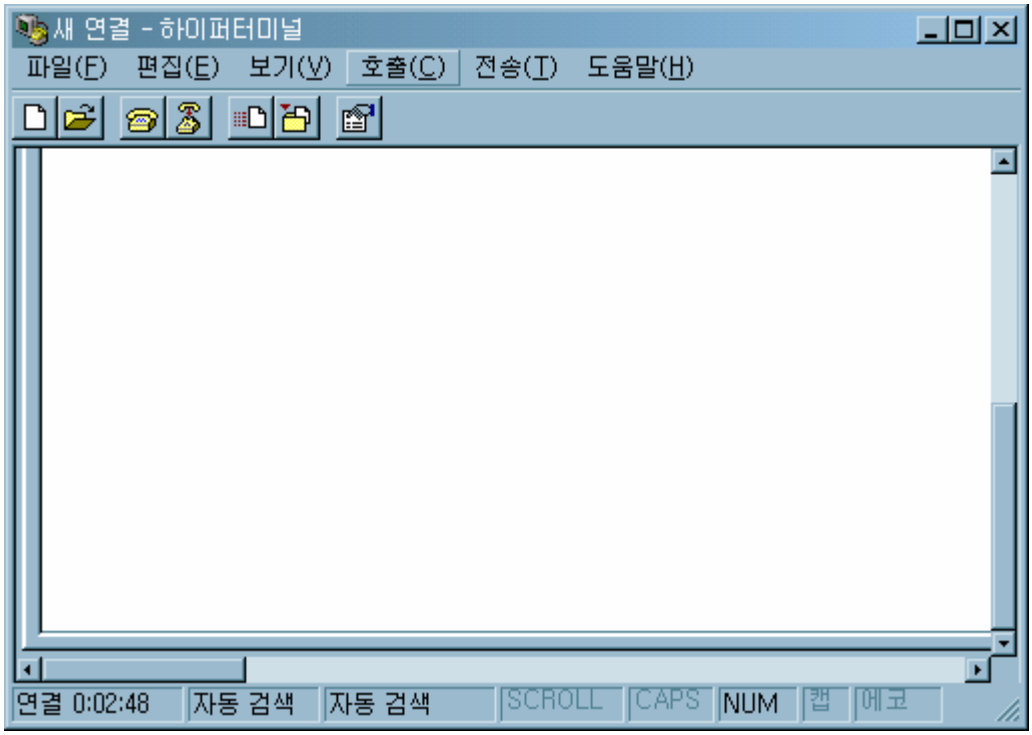
No.	Interface	Explanation
(1)	**POWER**	Power LED, display whether external power is supplied normally or not. **(Green)**
(2)	**FXS**	Display the operation status of "FXS" voice interface port.(Yellow)
(3)	**PSTN**	Display the operation status of PSTN backup port (**Red**)
(4)	**MLINK**	Display the LINK status of PSTN modem interface (**Green)**
(5)	**MACK**	Display the activity status such as transmission and receive packet of PSTN modem interface. (Yellow)
(6)	**LNK**	Display the LINK status of Ethernet interface.(**Green**)
(7)	**TX**	Display the transmission activity of Ethernet interface.(Yellow)
(8)	**RX**	Display the transmission activity of Ethernet interface.(Yellow)

- To check the operation status of VoiceFinder AP160 Gateway, check the '⑴ POWER LED' and '⑹ LNK LED' indicating Ethernet Link.

Use Console terminal with HyperTerminal

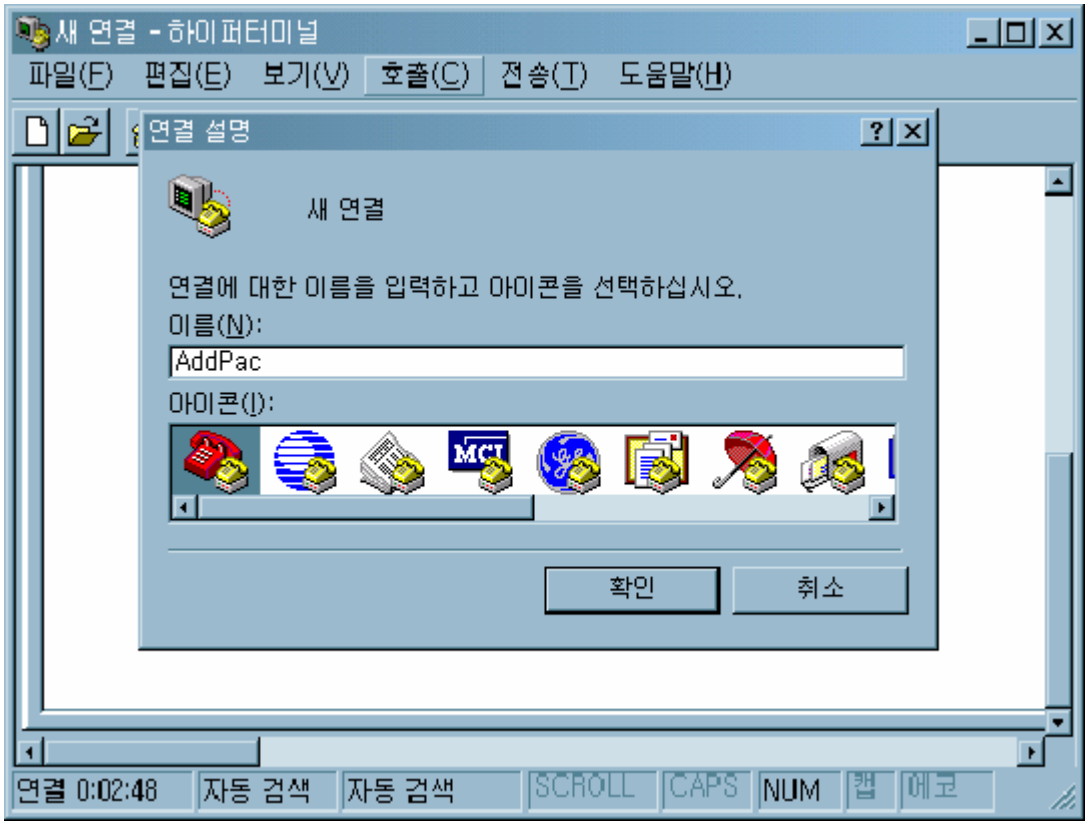
- To use a PC as a Console terminal, the communication emulator application should be installed. When the PC is MS-Windows line, use the HyperTerminal Application.

Figure 3-6: MS-Windows Communication Emulator HyperTerminal



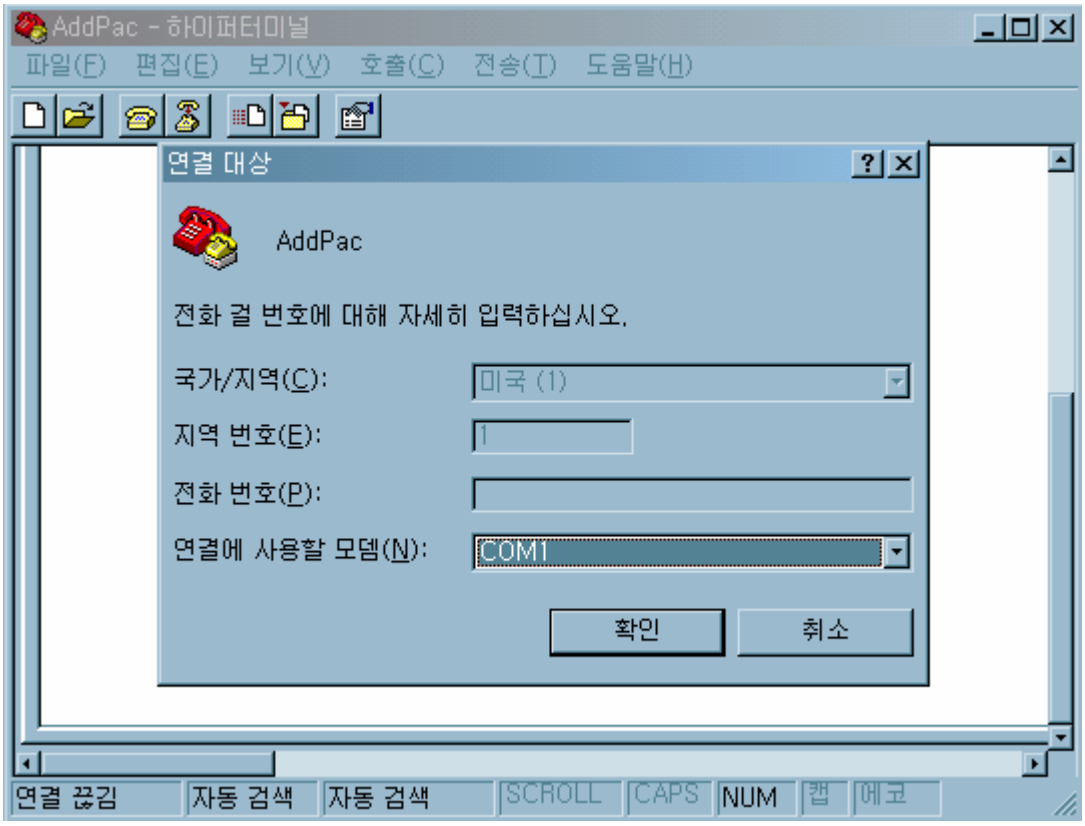
- Assign a name to the connection. “AddPac” is used at the below example.

Figure 3-7: Assign a name for the new connection



- Select the interface whether the Console cable is connected. Typically, the Console cable is connected to the RS-232C 9Pin Serial Port, so select the right port according to the user environment. “COM1” is selected at the below example.

Figure 3-8: Select the interface for Console cable



- Set the port information. The below examples is based on “COM1” port.

Figure 3-9: COM1 port configuration

- After the configuration, press “Enter” button, then the below message will be displayed on the HyperTerminal. This message shows the routing S/W version, Gateway H/W test result, memory and etc.

Figure 3-10: The HyperTerminal message of VoiceFinder AP160 Gateway

```
System Bootstrap, Version 1.2
Decompressing the image:
##############[OK]

System Boot Loader, Version 2.0.2/HDT
Copyright (c) by AddPac Technology Co., Ltd. Since 1999.

System Bootstrap, Version 1.2
Decompressing the image:
##################################################
##################################################[OK]

VoiceFinder Gateway Series (AP160)
Serial Number: AP160-ff0494
32BIT RISC Processor With 16777216 Bytes System Memory
8388608 Bytes System Flash Memory
2097152 Bytes 2nd System Flash Memory

1 RS232 Serial Console Interface
1 Ethernet/IEEE 802.3 Interface

AP160 System software Revision 6.10T
Released at Mon Aug 14 06:43:45 2000
Program is 1503168 bytes, checksum is 0xc02a8fe

Local Time : Thu Jun 28 08:30:42 1990
Copyright (c) by AddPac Technology Co., Ltd. Since 1999.

Voice Module type (0): FXS
```

```
DSP S/W download (0): .. OK

The System is ready. Please login to system.
login:
Interface async0, changed state to UP

Interface ethernet0.0, changed state to UP
VoipGateway::Init1    - No IP address on the VoIP Interface

login: root
password:******
RGW   -   Login   : root at Console on Thu Jan   1 03:14:59 1970

router#
```

- With the log-in message, input the user name “root” and the password “router”. After the log-in process, the prompt “router#” is displayed on the console terminal.

- There are two types of prompts used for VoiceFinder AP160 Gateway: “router>” and “router#”. The “ **>** ” prompt indicates that the user is not an administrator. With this prompt, the user is unable to use certain commands: particularly the configuration commands. The “ **#** ” prompt indicates that the user is an administrator (or root), and the user is authorized to use all the functions and commands.

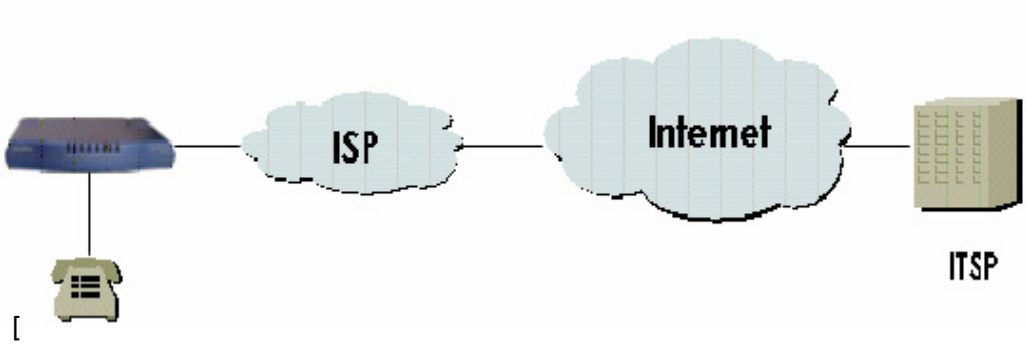
- Log-in as “Admin” allows to change settings. Therefore, it is advised to change the default password for security purposes. Refer to Quick Operation Guide & APOS Operation Guide for password change and detailed configuration.

Chapter 4. Appendix

Basic Configuration & network

Use VoIP Call via PSTN Modem

Figure 4-1: VoIP call via PSTN Modem



[

Configuration(example)

In this configuration the Dial-up modem connection is established only when the call is established. Also, the connection is terminated after the call termination.

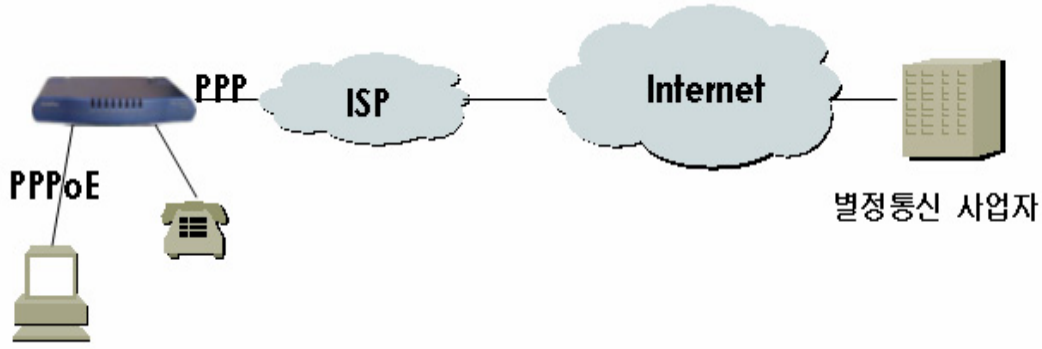
In this case, it talkes 20~ 25 second between the digit input and modem connection. Also, after the connection, GateKeepr registration requires 1~2 seconds and user can hear ring-back-tone. So there should be around 20 seconds mute.

```
!
interface async0
 no ip address
 modem script dialer atdt01414      → ISP dialing number of the user
 ppp authentication pap callin
 ppp pap sent-username addpac password addpac1234 → The
authenticatioin infoatin from ISP
 ppp compression pfc
 ppp compression acfc
 ppp ipcp ms-dns
 ppp ipcp default-route
!
! Pots peer configuration.
!
dial-peer voice 0 pots
 destination-pattern 5683848  → E.164 number from the Internet Telephone
Service Provider
 port 0/0
!
```

```
! Voip peer configuration.
!
dial-peer voice 1000 voip
  destination-pattern T
  session target ras
  dtmf-relay h245-alphanumeric
!
! Gateway configuration.
!
gateway
  h323-id addpac                    → H.323 ID from ITSP
  gkip 172.17.1.202 1719 128        → Gatekeeper IP Address of ITSP
  register
```

Using VoIP (Phone) and Data (PC) service via PSTN Modem

Figure 4-2: Data and VoIP service via PSTN Modem



For this application, PPPoE Application should be istalled at PC to get the public IP from VoiceFinder AP160 Gateway. (It is default applicatio for MS-Windows XP.)

Configuration(example)

In this configuration the Dial-up modem connection is established when the user uses PC or when the call is established. Also, the connection is terminated after the call termination or the Internet connection of PC.

Table 4-1: VoIP Call use and Connection condition

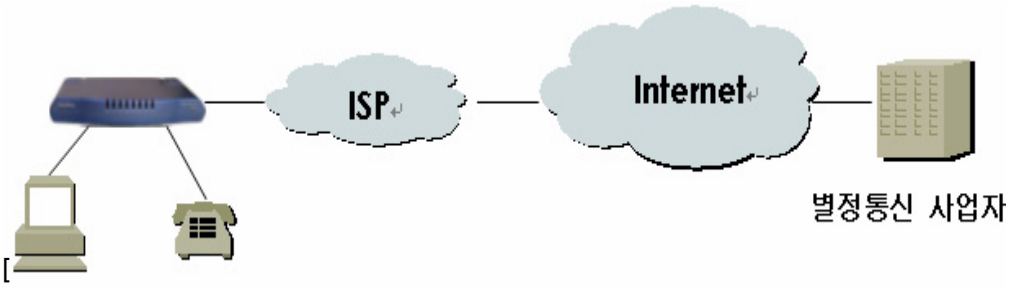
VoIP Call use	PPPoE connection	PPP connection (Dial-up)
X	X	X
X	O	O
O	O	O
O	X	O

```
!
ip classless
!
dhcp-list 0 type server
dhcp-list 0 address server interface async0
dhcp-list 0 option dhcp-lease-time 600
!
!
ip-share enable
ip-share interface net-side async0
ip-share interface local-side ether0.0
!
interface ether0.0   → working as PPP server (PPP relay)   by default
 no ip address
 encapsulation pppoe
 ppp authentication pap callin
 ppp pap sent-username addpac password addpac1234
 ppp echo interval 20
 ppp ipcp ms-dns
 ppp ipcp default-route
 ppp role server
!
!
interface async0
 no ip address
 modem script dialer atdt01414      → ISP dialing number of the user
 ppp authentication pap callin
 ppp pap sent-username addpac password addpac1234 → The user
 authentication information of ISP
 ppp compression pfc
 ppp compression acfc
 ppp ipcp ms-dns
 ppp ipcp default-route
!
! Pots peer configuration.
!
dial-peer voice 0 pots
 destination-pattern 5683848   → E.164 number from Internet Telephone
Service Provider
 port 0/0
!
! Voip peer configuration.
!
dial-peer voice 1000 voip
 destination-pattern T
 session target ras
 dtmf-relay h245-alphanumeric
```

```
!
! Gateway configuration.
!
gateway
 h323-id addpac                    → H.323-ID from ITSP
 gkip 172.17.1.202 1719 128        → Gatekeeper IP Address of ITSP
 register
```

To keep the Dial-up Modem connection

Figure 4-3: To keep the Dial-up modem connection



Configuration (Example)

This configuration is similar to 4.2. However, when the dial-up connection charge is fixed, it keeps the dial-up connection to eliminate call-by-call connection delay. So this function is disabled at the default configuration.

```
!
ip classless
!
dhcp-list 0 type server
dhcp-list 0 address server interface async0
dhcp-list 0 option dhcp-lease-time 600
!
!
ip-share enable
ip-share interface net-side async0
ip-share interface local-side ether0.0
!
interface ether0.0
```

no ip address

ip dhcp-group 0

!

interface async0

interface async0

no ip address

modem keep-active → Keep the dial-up modem connection. (defaut:no modem keep-active)

modem script dialer atdt01414
ppp authentication pap callin
ppp pap sent-username addpac password addpac1234
ppp compression pfc
ppp compression acfc
ppp ipcp ms-dns
ppp ipcp default-route

!

- To termination the dial-up modem connection and to make connection only necessary

AP160# configure

AP160(config)# interface async 0

AP160(config-async0)# no modem keep-active

VoiceFinder AP160 configuration with GUI Easy-setup

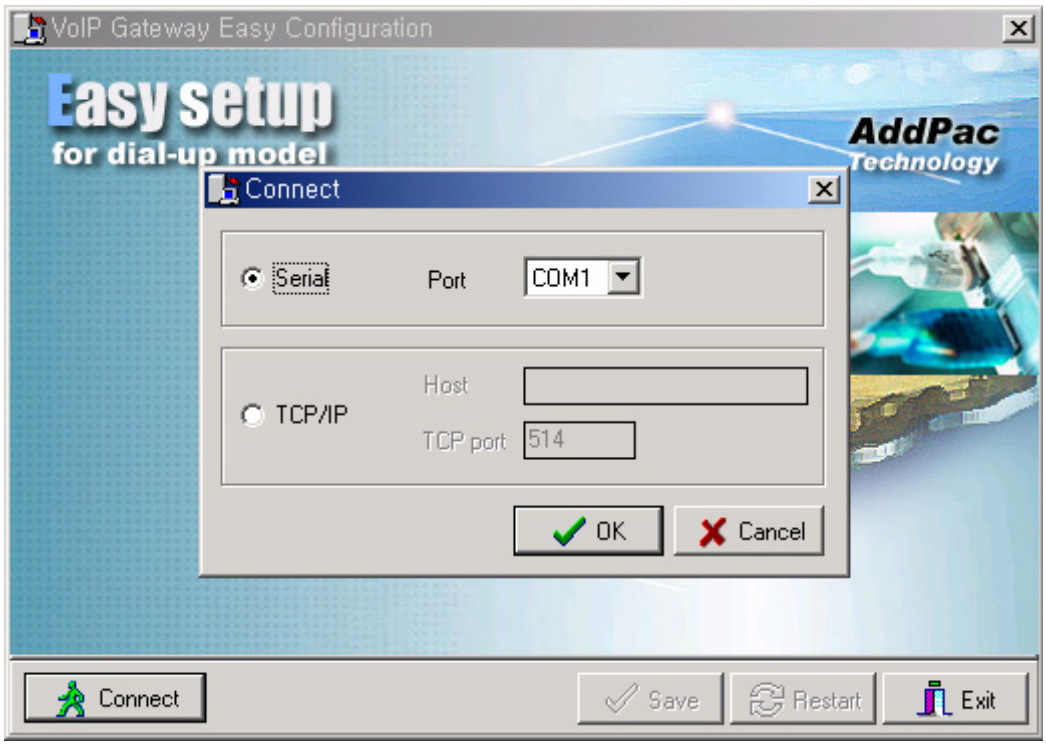
The CLI configuration with the Console port is explained above. However, this part explains “Ez-setup Tool”, especially for the first time users. However, the configurable parameters are limited for Ez-setup, compare to CLI. So, use CLI for more delicate configuration such as optional command. (Ex.: SIP, number translation, PLAR,security …)

- download Easy setup for dial-up model program and install it at the PC.
- Execute the program.
- Access to PC with Serial or TCP/IP.

Figure 4-4: The initial window of Easy Setup program

- Click the “Connect” button.

Figure 4-5: Select the connection type



- Select the interface to use.
- Select the serial. (Default IP Address is not configured.)
- Enter the ID and Password issued by ISP.

Figure 4-6: Enter the ID, Password and the telephone number

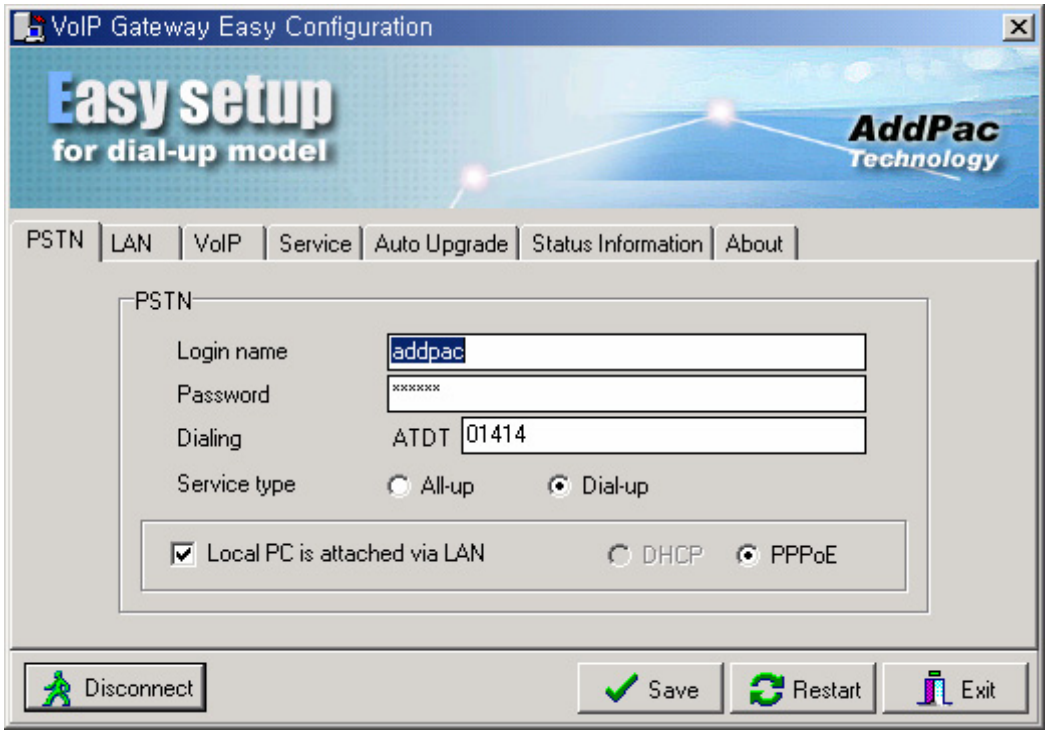
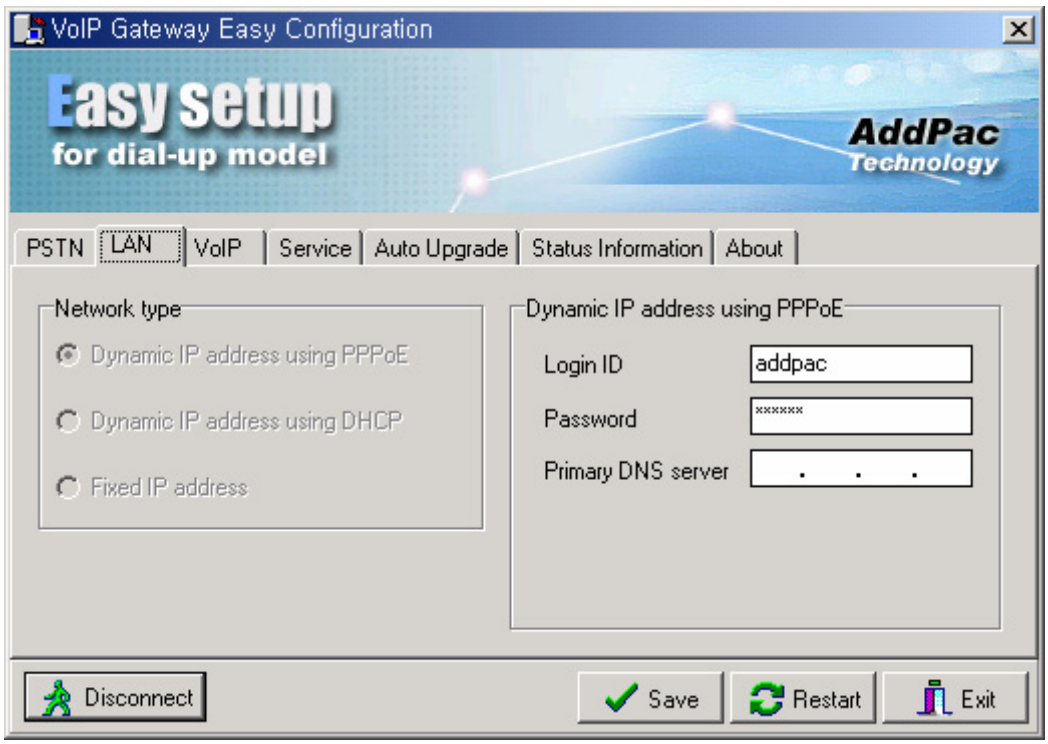
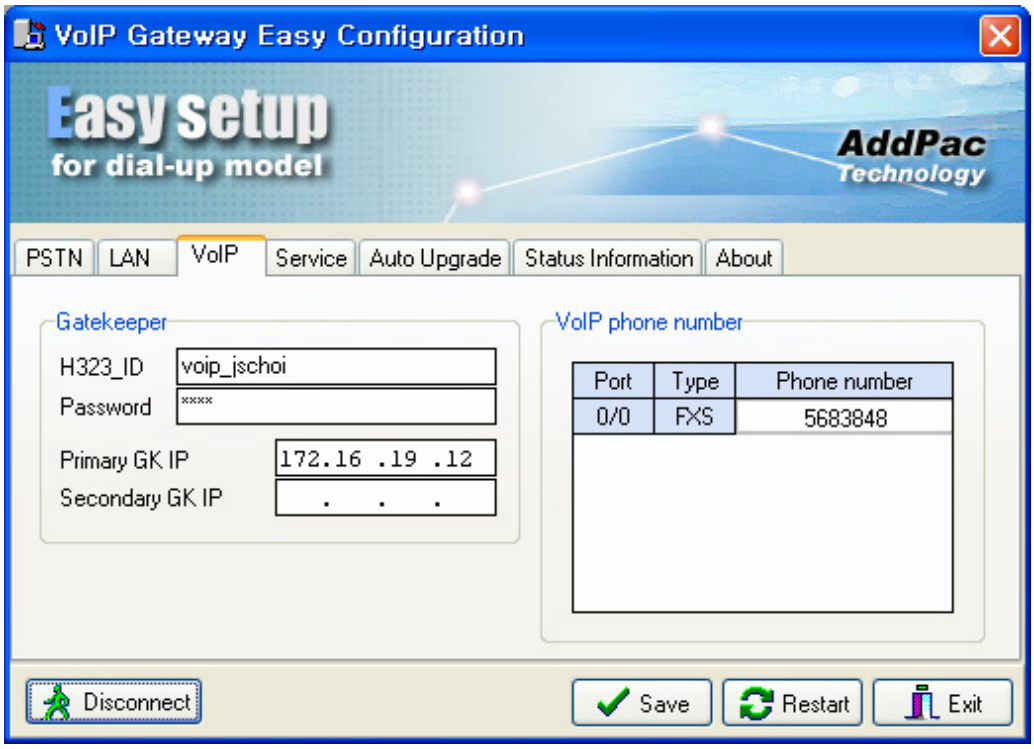


Figure 4-7: Configure for the Data communication at PC



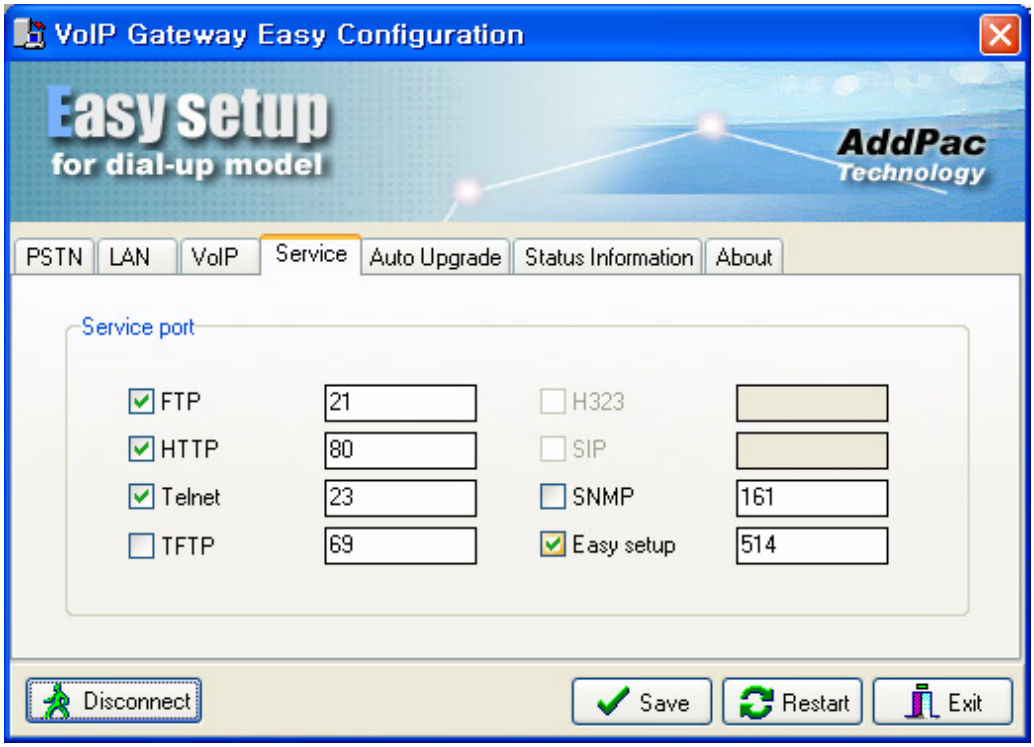
- The network type configuration is same as the PSTN configuration. So the Network type parameters are inactivated.

Figure 4-8: Configure Gatekeeper and E.164 information



- To use VoIP service by interoperating with Gatekeeper, enter H.323-ID, E.164 and Gatekeeper IP address from the Internet Telephone Service Providers.

Figure 4-9: Configure the service port



- Configure the service port of VoiceFinder AP160 Gateway.

Figure 4-10: Configure Automatic upgrade of system software

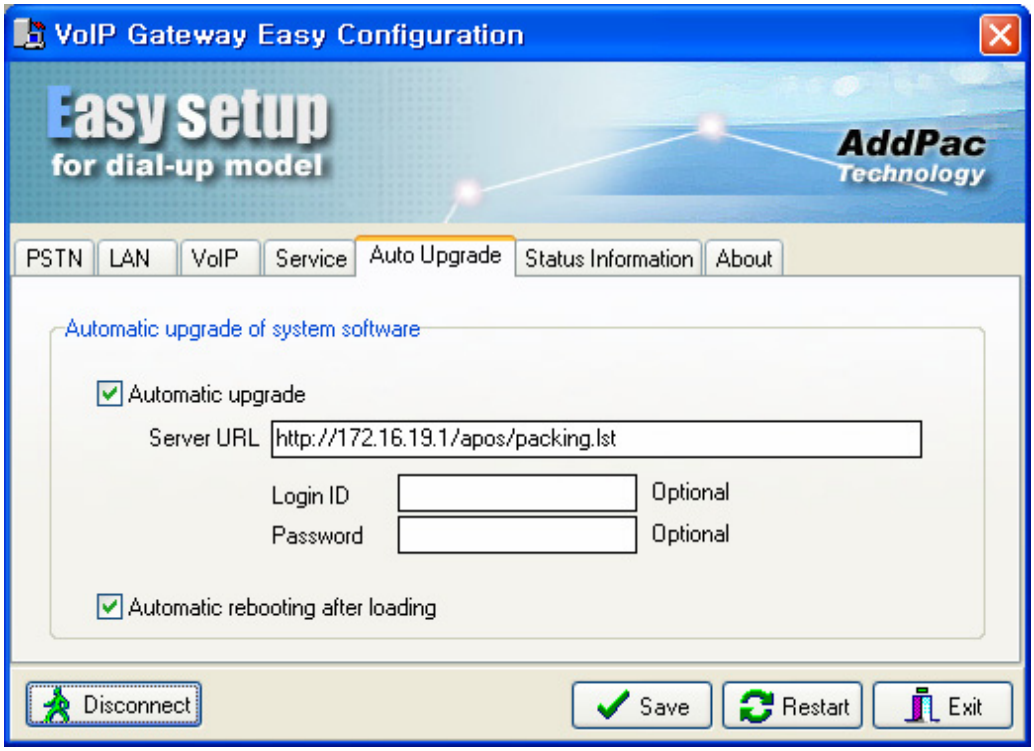


Figure 4-11: Gateway Status Information

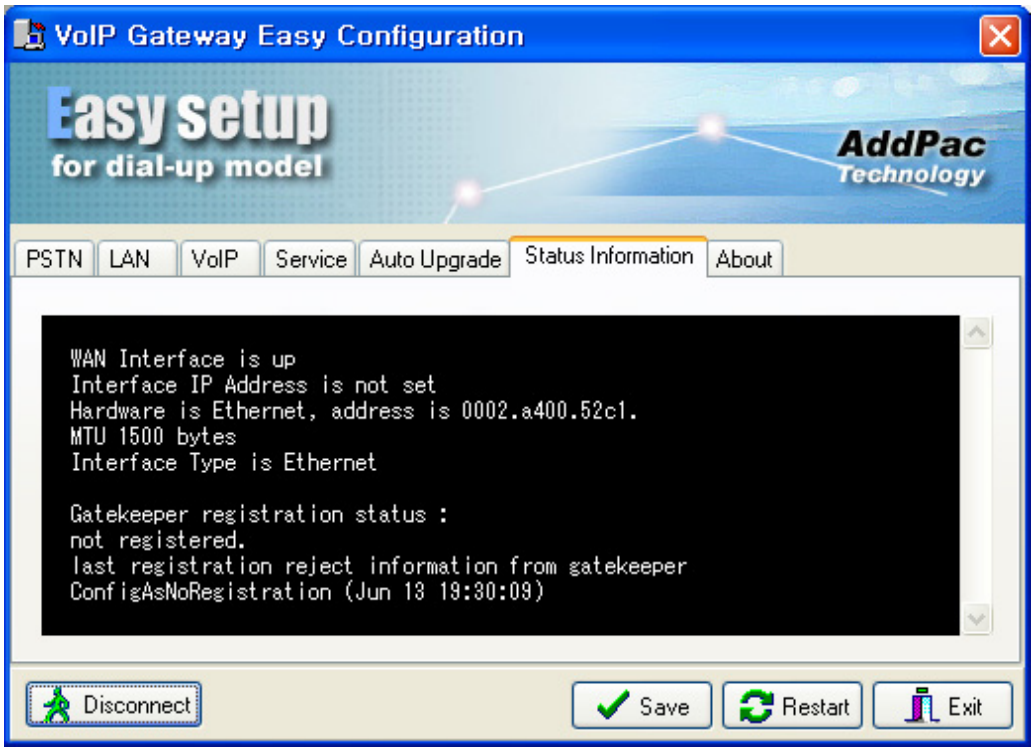
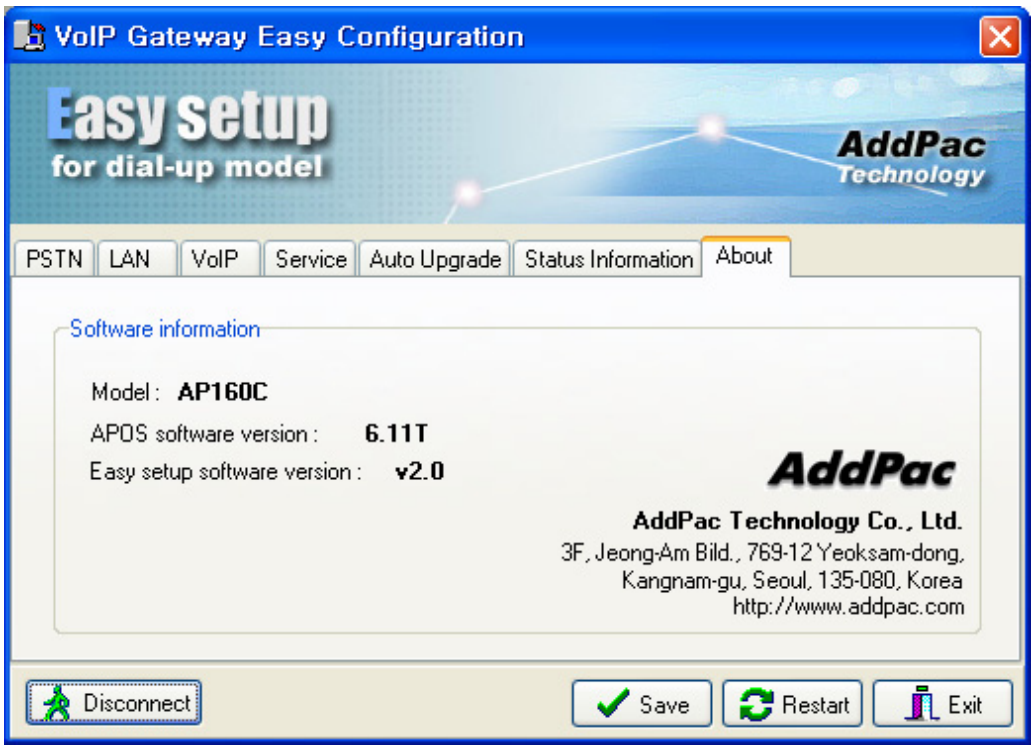


Figure 4-12: H/W & S/W Version Information



How to use PPPoE Driver at WindowsXP

To use PC as PPPoE terminal, there should be PPPoE connection Program at the PC. The below explains how to use PPPoE Driver at MS-Windows XP.

Figure 4-13: Select Network Connections at Control Panel

Figure 4-14: Select New Connection Wizard

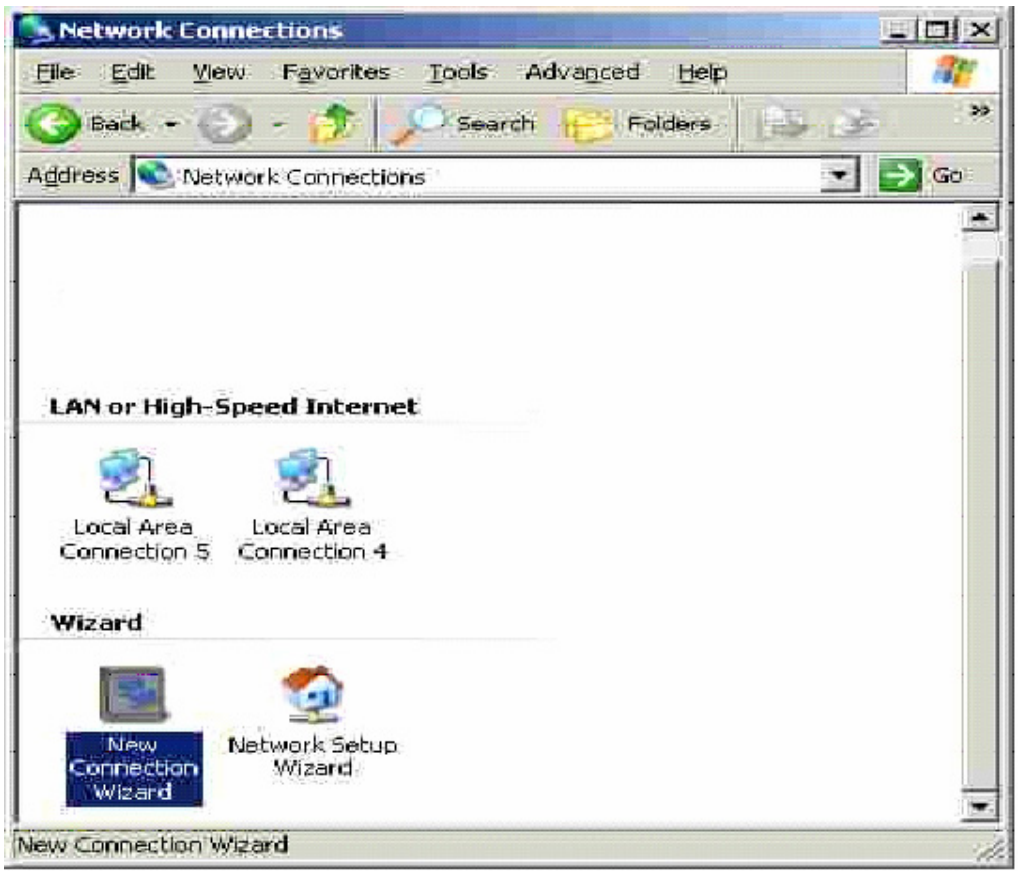


Figure 4-15: New Connection Wizard window

Figure 4-16: Select Network Connection Type

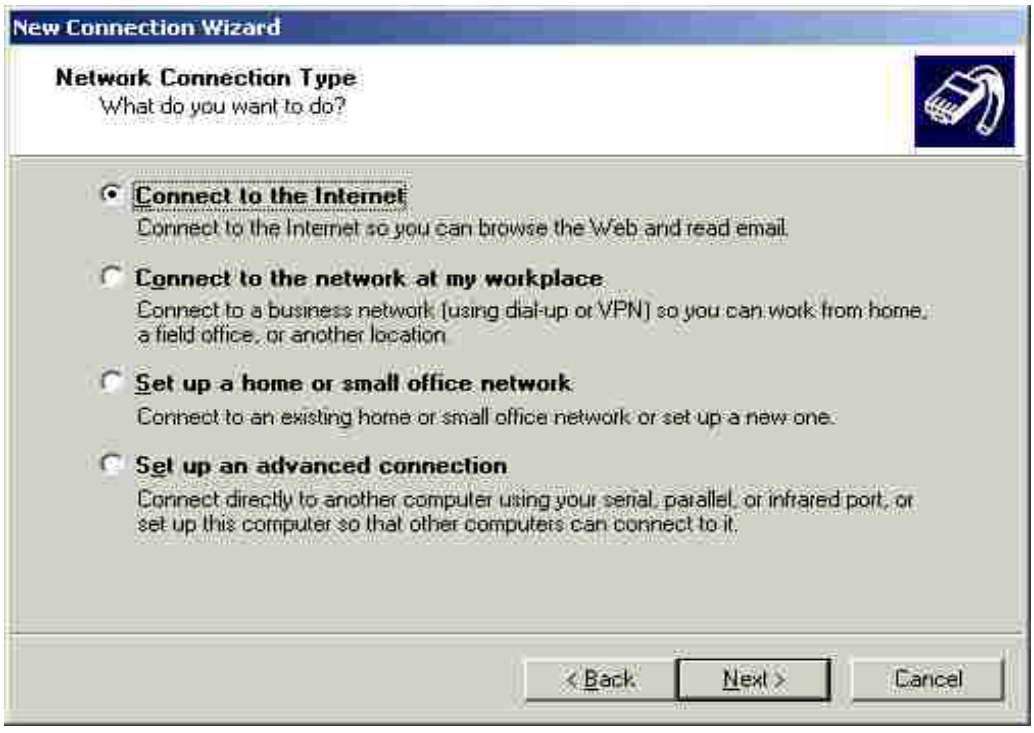


Figure 4-17: Select “Set up my connection manually”

Figure 4-18: Select "a broadband connection requires a user name and password."

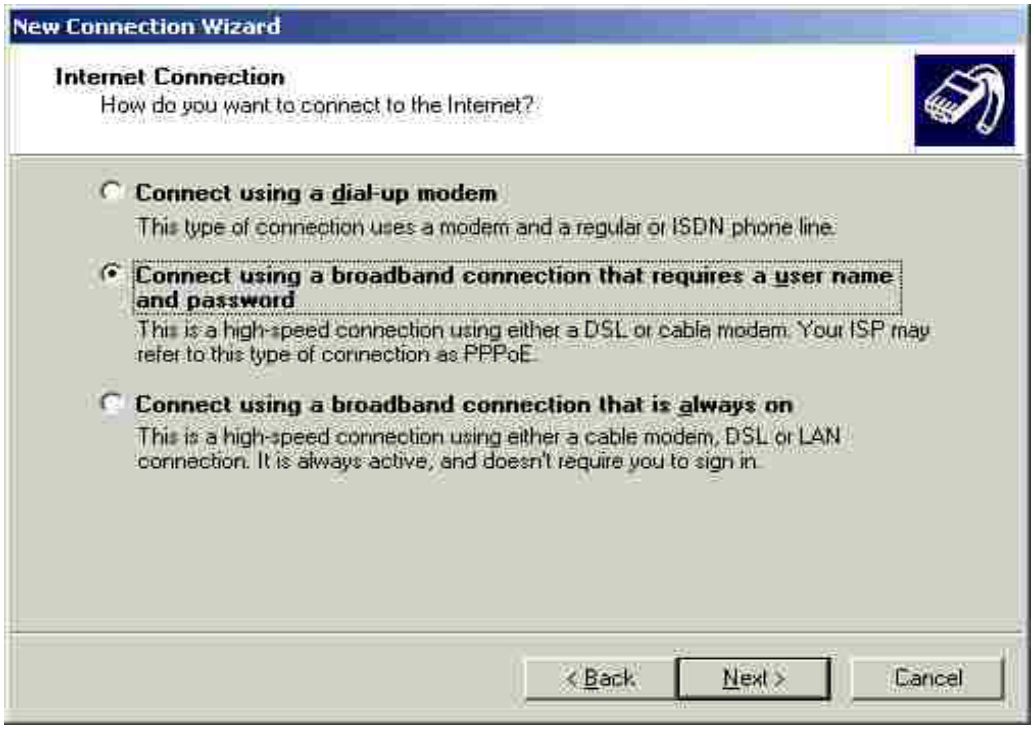


Figure 4-19: Enter the ISP name

Figure 4-20: Enter the Internet Account Information

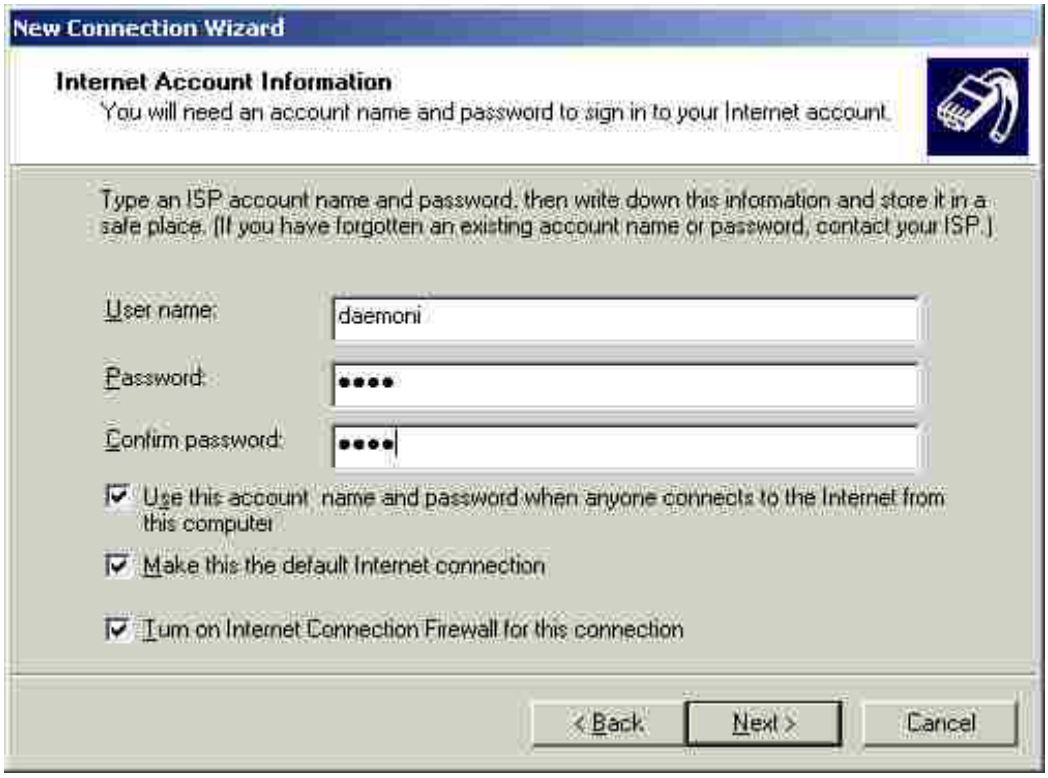
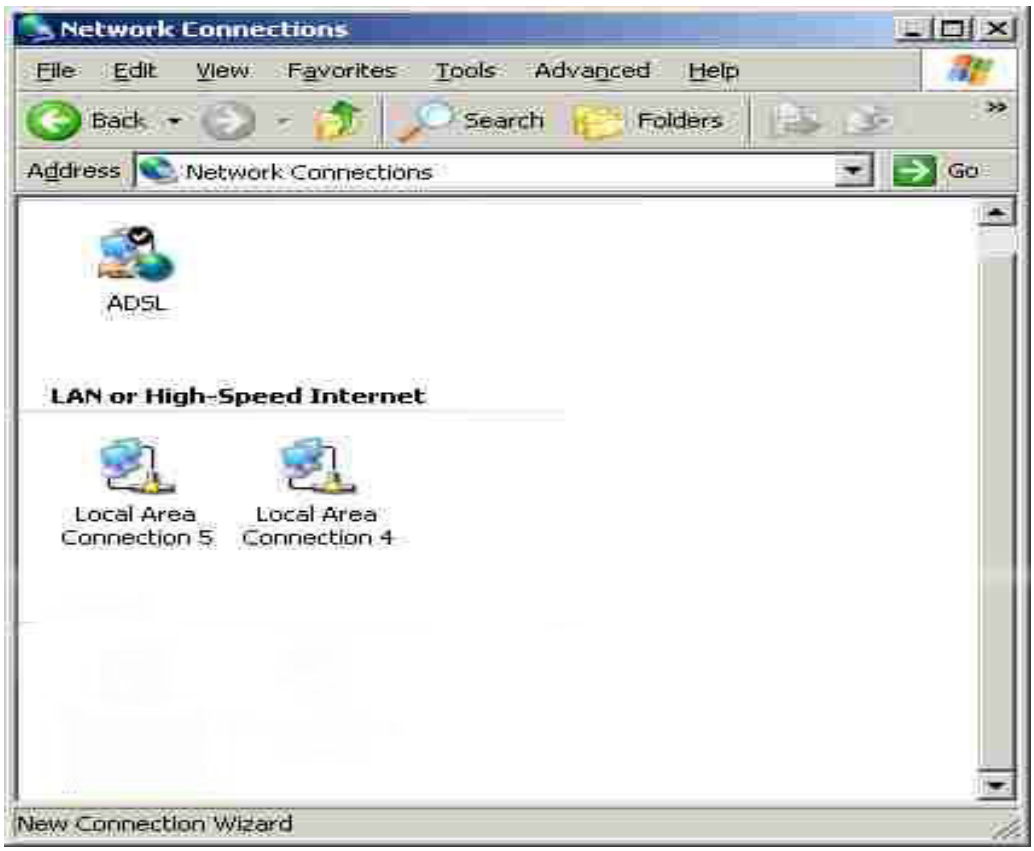


Figure 4-21: Complete the New Connection Wizard

Figure 4-22: A new connection, ADSL



VoiceFinder AP160 Gateway Technical Description

This Chapter explains the supported Technical Specification of VoiceFinder AP160 VoIP Gateway.

(* means that the item is not yet implemented.)

IP Routing Service

IP Routing Protocols	Static
	IEEE 802.1Q VLAN Routing

LAN Service

Ethernet Interface	10Mbps Ethernet Interface
Configuration Management	Port Configuration
	Secondary/Subnet Support
	MTU Size Change
	ARP Entry Revalidate Function
	Transmit/Receive Connection Recovery Function

Voice over IP Service

VoIP Protocols	ITU-T H.323 v2 Protocol with ITU-T H.235 Security Feature
	Session Initiation Protocol (SIP)
Vocie Compression	G.723.1 MP-MLQ, 6.3Kbps, 5.3Kbps
	G.729.A CS-ACELP, 8Kbps
	G.711 PCM, 64Kbps
Voice Processing	Voice Activity Detection (VAD)
	T.38 Protocol (FAX)
	Dual Tone Multi Frequency (DTMF)
	Comfort Noise Generation (CNG)
	Echo Cancellation

Network Managements

SNMP	Standard SNMP Agent MIB v2
***RMON**	Remote Monitoring, RFC1271 Support
Web	Web Based Management using HTTP Server Interface
Others	Traffic Queuing
	Frame-Relay Flow Control

Security Functions

IP Access List	Standard and Extended IP Access List, IP Packet Filtering
PPP User Authentication	Password Authentication Protocol (PAP)
	Challenge Handshake Authentication Protocol (CHAP)
Others	Access Control and Data Protections
	Enable/Disable for Specific Protocols
	Multi-level User Account Management
	Auto-disconnect for Telnet/Console Sessions
***VPN**	High-performance VPN Features

Operation and Managements

Console Port	RS-232C Based Async Serial Interface Support
Remote Management	Console, RlogIn, Telnet
System Performance Analysis	Process, CPU, and Connection Interface
APOS Management	APOS Configuration Back-up and Restore
	Remote Upgrade Function using FTP/TFTP
Others	Debugging and System Auditing
	Data Logging and Diagnostics
	System Booting, Auto-rebooting with Watch-dog Timer
	IP Traffic Statistics with Accounting

Other Scalability Features

DHCP	Dynamic Host Configuration Protocol (DHCP) Server and Relay Functions
***NAT/PAT**	Network Address Translation (NAT) Protocol
	Port Address Translation (PAT) Protocol
Bridging	IEEE Standard Spanning Tree Bridging Protocol
	Remote Bridging Support
	Concurrent Bridging Support
User Interface	Industry Standard Command Line Interface (CLI)
Others	Network Time Protocol (NTP) Support

Hardware Specification

Microprocessor	32bit RISC Microprocessor
Network Interface	1-Ports Async Dial-up modem interface (RJ11)
	1-Port 10Mbps Ethernet Interface for LAN (RJ45)
	1-Port Async Serial Interface for RS-232C Console Port (RJ45)
	1-Port FXS Voice Interface (RJ11)
Memory	2MB Flash Memory
	16MB SDRAM / Main Memory (64MB expandable / at shipment)
System LED	LAN, Async, Power LED (Front Panel)
Power	DC External Power Supply (5V x 1.2A)
Power Requirement	9 Watt
Operating Temperature	0°C ~ 55°C
Storage Temperature	-40°C ~ 85°C
Relative Humidity	5% ~ 95%
Cooling Method	Internal heat resistance
Depth x Width x Height	TBD
Weight	TBD

Cable Specification

This Appendix provides information about the Pinout specifications of the following cables used with VoiceFinder AP160 Gateway.

- Console Port Signal and Pinout (RJ-45 to DB9)
- Ethernet Cable Assemble (RJ-45 to RJ-45) Pinout

[Console Port Signal & Pinout]

In order to connect the gateway console port with the Terminal Emulating PC, the RJ-45 to DB9 (Female DTE Connector) cable is used. The transferred signal and Pinout specifications are enlisted in the following table.

Table 4-2: The transferred signal and Pinout specification

Gateway Console (DTE)	RJ-45	DB-9	Console Device (PC)
Signal	RJ-45 Pin	DB-9 Pin	Signal
RTS	1	8	CTS
DTR	2	6	DSR
TxD	3	2	RxD
GND	4	5	GND
GND	5	5	GND
RxD	6	3	TxD
DSR	7	4	DTR
CTS	8	7	RTS

[Ethernet Cable Assemble (RJ-45 to RJ-45) Pinout]

In order to connect the gateway with other equipments (i.e. HUB), the RJ-45 to RJ-45 Ethernet Cable is used. The RJ-45 Connector Pin sequence is provided below and the transferred signal and Pinout specifications are enlisted at the below table.

Figure 4-23: 10Base-T RJ-45 Connector

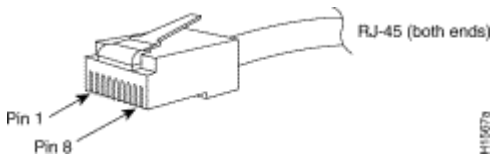


Table 4-3: Direct Ethernet Cable Signal & Pinout

RJ-45	Signal	Direction	RJ-45 Pin
1	**Tx +**	→	1
2	**Tx -**	→	2
3	**Rx +**	←	3
4	**-**	**-**	4
5	**-**	**-**	5
6	**Rx -**	←	6
7	**-**	**-**	7
8	**-**	**-**	8

1. These specifications are for serial cables connecting the gateway and the HUB.
2. For gateway to gateway or gateway to PC connection, the Cross Cable must be used.